

What is claimed is:

1. A ball linear guide having ball circulation paths formed on both sides opposed to slide surfaces of the rail, the ball circulation paths being each formed by a loaded ball groove, an unloaded ball hole, and direction changing U-shaped passages which connect the loaded ball groove and the unloaded ball hole with each other, said ball linear guide comprising:

10 a metallic component comprising a metallic flat plate base, the metallic flat plate base being formed by erecting thereon a pair of plate portions and connecting the pair of plate portions integrally with each other through a first flat plate portion, the pair of plate portions being respectively formed with dovetail grooves which respectively constitute loaded ball grooves substantially throughout the overall lengths of side faces opposed to the slide surfaces;

20 a first synthetic resin component disposed so as to cover the flat plate base in an inserted state of the pair of plate portions into the first synthetic resin component, the first synthetic resin component having one sides which, on the first flat plate portion side in the loaded ball grooves, connect to a third flat plate portion positioned on a front side of the first flat plate portion to form

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slits, also having a pair of unloaded ball holes formed on the side opposite to the side where the dovetail grooves of the plate portions are formed, and further having grooves for forming direction changing U-shaped passages which
5 connect the loaded ball grooves and the unloaded ball holes with each other at both ends; and

a pair of second synthetic resin components mounted on the first synthetic resin component and closing the unloaded ball holes and the direction changing U-shaped
10 passages formed in the first synthetic resin component, the pair of second synthetic resin components having other sides for forming the slits;

wherein the dislodgment of balls from the loaded ball grooves is prevented by the one sides which form the
15 slits in the first synthetic resin component and the other sides which form the slits in the second synthetic resin components.

2. A ball linear guide according to claim 1, wherein said pair of plate portions of said metallic component are
20 inserted respectively into a pair of slots formed in said first synthetic resin component to mount and fix the first synthetic resin component to the metallic component.

3. A ball linear guide according to claim 1, wherein, said metallic component is subjected to insert resin
25 molding to fix said first synthetic resin component to the

metallic component.

4. A ball linear guide according to claim 1, wherein,
in said first synthetic resin component, rake portions for
the balls are formed contiguously to both ends of each of
5 said one sides which form said slits.

5. A ball linear guide according to claim 1, wherein
said unloaded ball holes and said grooves of the direction
changing U-shaped passages in said first synthetic resin
component are formed in such a manner that in each of their
10 sectional shapes a bottom portion is semicircular and the
depth is almost equal to or larger than the diameter of
each of the balls.

6. A ball linear guide according to claim 1, wherein
each of said paired second synthetic resin components is
15 mounted removably onto said first synthetic resin component.

7. A ball linear guide according to claim 1, wherein
the spacing of said ball dislodgment preventing slits
formed by free ends of said first and second synthetic
resin components is a little smaller than the diameter of
20 each of the balls.

8. A ball linear guide according to claim 1, wherein
the thickness of each of said paired plate portions in said
metallic component is equal to or larger than the diameter
of each of the balls.

25 9. A method of manufacturing a ball linear guide

having ball circulation paths formed on both sides opposed to slide surfaces of a rail, the ball circulation paths being each formed by a loaded ball groove, an unloaded ball hole, and direction changing U-shaped passages which

5 connect the loaded ball groove and the unloaded ball hole with each other, said method comprising:

a first step of fabricating a metallic component and a first synthetic resin component separately, said metallic component comprising a metallic flat plate base, said

10 metallic flat plate base being formed by erecting thereon a pair of plate portions and connecting said pair of plate portions integrally with each other through a first flat plate portion, said pair of plate portions being respectively formed with dovetail grooves which

15 respectively constitute loaded ball grooves substantially throughout the overall lengths of side faces opposed to said slide surfaces, said first synthetic resin component having one sides which, on said first flat plate portion side in said loaded ball grooves, connect to a third flat
20 plate portion positioned on a front side of said first flat plate portion to form slits, also having a pair of unloaded ball holes formed on the side opposite to the side where said dovetail grooves of said plate portions are formed, and further having grooves for forming direction changing
25 U-shaped passages which connect said loaded ball grooves

and said unloaded ball holes with each other at both ends;

a second step of inserting said pair of plate portions of said metallic component respectively into a pair of slots formed in said first synthetic resin

5 component which metallic component and first synthetic resin component have been fabricated separately in the first step, to mount and fix the first synthetic resin component so as to cover said flat plate base of the metallic component;

10 a third step of inserting balls into a ball circulation path formed in the second step; and

a fourth step of, after the third step, closing said unloaded ball holes and said direction changing U-shaped passages formed in said first synthetic resin component and
15 mounting a pair of second synthetic resin components onto the first synthetic resin component, said second synthetic resin components having other sides for forming said slits.

10. A method of manufacturing a ball linear guide having ball circulation paths formed on both sides opposed
20 to slide surfaces of a rail, the ball circulation paths being each formed by a loaded ball groove, an unloaded ball hole, and direction changing U-shaped passages which connect the loaded ball groove and the unloaded ball hole with each other, said method comprising:

25 a fifth step of fabricating a metallic component

comprising a metallic flat plate base, said metallic flat plate base being formed by erecting thereon a pair of plate portions and connecting said pair of plate portions integrally with each other through a first flat plate portion, said pair of plate portions being respectively formed with dovetail grooves which respectively constitute loaded ball grooves substantially throughout the overall lengths of side faces opposed to said slide surfaces; and

5 a sixth step of subjecting said metallic component fabricated in the fifth step to insert resin molding to form a first synthetic resin component so as to cover said flat plate base in an inserted state of said pair of plate portions respectively into slots formed in said first synthetic resin component, to fix said metallic component,

10 said first synthetic resin component having one sides which, on the first flat plate portion side in said loaded ball grooves, connect to a third flat plate portion positioned on a front side of said first flat plate portion to form slits, also having a pair of unloaded ball holes

15 formed on the side opposite to the side where said dovetail grooves of said plate portions are formed, and further having grooves for forming direction changing U-shaped passages which connect said loaded ball grooves and said unloaded ball holes with each other at both ends;

20 a seventh step of inserting balls into said ball

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circulation paths formed in the sixth step; and

an eighth step of, after the seventh step, closing said unloaded ball holes and said direction changing U-shaped passages formed in said first synthetic resin

5 component and mounting a pair of second synthetic resin components onto said first synthetic resin component, said second synthetic resin components having other sides for forming said slits.

11. A method according to claim 9, wherein, in the
10 first step, rake portions for the balls are formed contiguously to both ends of each of said one sides which form the slits in said first synthetic resin component.

12. A method according to claim 10, wherein, in the
15 fifth step, rake portions for the balls are formed contiguously to both ends of each of said one sides which form the slits in said first synthetic resin component.

13. A method according to claim 9, wherein the
spacing of the slits for preventing dislodgment of the balls which slits are formed by free ends of said first and
20 second synthetic resin components is a little smaller than the diameter of each of the balls.

14. A method according to claim 10, wherein the
spacing of the slits for preventing dislodgment of the balls which slits are formed by free ends of said first and
25 second synthetic resin components is a little smaller than

the diameter of each of the balls.

15. A method according to claim 9, wherein, in the fourth step, said second synthetic resin component is attached to said first synthetic resin component removably.